

Silicon Sensors for Biology and Medicine

Abstract

The integration of top-down nanotechnology and biotechnology can provide tremendous opportunities for biology and medicine and to enable a wide range of applications in diagnostics, therapeutics, and tissue engineering. In this talk, we will present an overview of our work in Silicon-Based BioMEMS and Bionanotechnology and discuss the state of the art and the future challenges and opportunities. We will review a range of projects in our group focused towards developing rapid detection of biological entities and developing point of care devices using electrical or mechanical phenomenon at the micro and nano scale. Progress in the development of Petri dishes-on-a-chip, silicon based nano-pores for detection of DNA, field-effect sensors for detection of DNA and proteins, and use of mechanical sensors for characterization of living cells will be presented.